Journal of

Microscopy

P. Echlin, K. M. Knowles, T. Mattfeldt,
J. B. Pawley, D. B. Williams

Volume 170 1993

© 1993 The Royal Microscopical Society

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by The Royal Microscopical Society for libraries and other users registered with the Copyright Clearance Center (CCC), Transactional Reporting Service, provided that the stated fee of $10.00 per copy is paid directly to the CCC, 27 Congress Street, Salem, MA 01970, U.S.A. Special requests should be addressed to the Editor. 0022-2720/93 $10.00.

Published by Blackwell Scientific Publications Ltd
Osney Mead, Oxford OX2 0EL, U.K.
25 John St., London WC1N 2BL, U.K.
23 Ainslie Place, Edinburgh EH3 6AJ, U.K.
Suite 500, 5th Floor, 238 Main St., Boston, MA 02142, U.S.A.
54 University St., Carlton, Victoria 3053, Australia
Librairie Arnette SA, 2 rue Casimir-Delavigne, 75006 Paris, France
Blackwell Wissenschaft-Verlag, Meinekestrasse 4, D-1000 Berlin 15, Germany
Blackwell MZV, Feldgasse 13, A-1238 Vienna, Austria

ISSN 0022-2720

Printed in Great Britain by the Alden Press, Oxford

Blackwell Scientific Publications
OXFORD LONDON EDINBURGH BOSTON
MELBOURNE PARIS BERLIN VIENNA

Contents

Part 1 April 1993

Editorial, 1

Referees, 2

A. M. GOKHALE. Utility of the horizontal slice for stereological characterization of lineal features, 3

J.-C. PACHE, N. ROBERTS, P. VOCK, A. ZIMMERMANN AND L. M. CRUZ-ORIVE. Vertical LM sectioning and parallel CT scanning designs for stereology: application to human lung, 9

L. M. CRUZ-ORIVE AND N. ROBERTS. Unbiased volume estimation with coaxial sections: an application to the human bladder, 25

E. B. VEDEL JENSEN AND H. J. G. GUNDERSEN. The rotator, 35

K. KIEU AND E. B. VEDEL JENSEN. Stereological estimation based on isotropic slices through fixed points, 45

I. SAXL. Contact distances and random free paths, 53

J. F. THOVERT, J. SALLES AND P. M. ADLER. Computerized characterization of the geometry of real porous media: their discretization, analysis and interpretation, 65

S. KANMANI, C. BABU RAO AND B. RAJ. On the computation of the Minkowski dimension using morphological operations, 81

H. HERMANN AND J. OHSER. Determination of microstructural parameters of random spatial surface fractals by measuring chord length distributions, 87

Part 2 May 1993

Editorial, 95

REVIEW

A. G. FITZGERALD. Characterization of materials using surface and thin-film analysis techniques, 97

G. I. COOPER, G. A. COX AND R. N. PERUTZ. Infra-red microspectroscopy as a complementary technique to electron-probe microanalysis for the investigation of natural corrosion on potash glasses, 111

J. XIMEN, Z. SHAO AND P. S. D. LIN. Theoretical calculation of probe size of low-voltage scanning electron microscopes, 119

N. C. KRIEGER LASSEN AND J. B. BILDE-SØRENSEN. Calibration of an electron back-scattering pattern set-up, 125

A. J. STRUTT AND D. B. WILLIAMS. Quantitative parallel electron energy-loss spectrometry of Cu–Be alloys, 131

N. WATANABE, T. MATSUMURA, Y. INAGAKI, K. KINOSHITA, Y. SHIMANUKI, K. FURUYA, T. TAGUCHI, M. TANIGUCHI AND H. KIHARA. Observation of biological materials by X-ray photoelectron-conversion contact microscopy, 141

E. F. BRES, P. STEUER, J.-C. VOEGEL, R. M. FRANK AND F. J. G. CUISINIER. Observation of the loss of the hydroxyapatite sixfold symmetry in a human fetal tooth enamel crystal, 147

S. WILLIAMS, X. ZHANG, C. JACOBSEN, J. KIRZ, S. LINDAAS, J. VAN'T HOF AND S. S. LAMM. Measurements of wet metaphase chromosomes in the scanning transmission X-ray microscope, 155

R. PELC AND Z. ŽIŽKA. Electron microprobe study of the effect of long-term vacuum storage of freeze-dried cryosections on distribution of elements in cells, 167

A. LÖNNROTH, U. SKOGLUND, K. T. TOKUYASU AND B. DANEHOLT. The adsorption staining technique applied to isolated premessenger ribonucleoprotein particles: a comparison with conventional techniques using electron microscope tomography, 173

SHORT TECHNICAL NOTE

M. F. CASSIDY AND D. E. ALLEN. A method to extend the application of microdroplet techniques in the SEM, 183

Book reviews, 187

Errata, 190

Part 3 June 1993

Editorial, 191

REVIEW

R. H. MILNE, G. G. HEMBREE, J. S. DRUCKER, C. J. HARLAND AND J. A. VENABLES. Surface studies in UHV SEM and STEM, 193

N. PETFORD AND J. A. MILLER. The study of fission track and other crystalline defects using confocal scanning laser microscopy, 201

W. M. PETROLL, H. D. CAVANAGH AND J. V. JESTER. Three-dimensional imaging of corneal cells using *in vivo* confocal microscopy, 213

E. H. OLDMIXON AND K. CARLSSON. Methods for large data volumes from confocal scanning laser microscopy of lung, 221

A. H. VOIE, D. H. BURNS AND F. A. SPELMAN. Orthogonal-plane fluorescence optical sectioning: three-dimensional imaging of macroscopic biological specimens, 229

V. N. MOROZOV, J. SHERMAN, N. R. KALLENBACH, SHOU MING DU AND N. C. SEEMAN. A scanning tunnelling microscopy study of the formation and chemical activation of step defects on the basal plane of pyrolitic graphite, 237

A. BEORCHIA, L. HELIOT, M. MENAGER, H. KAPLAN AND D. PLOTON. Applications of medium-voltage STEM for the 3-D study of organelles within very thick sections, 247

Y. H. LI, Z. CHEN AND M. H. LORETTO. Spurious contributions from scattered electrons in thin-film X-ray microanalysis, 259

A. PATAK, A. WRIGHT AND A. T. MARSHALL. Evaluation of several common standards for the X-ray microanalysis of thin biological specimens, 265

N. THOMAS AND I. AP GWYNN. Estimation of gold-labelled macromolecules attached to cell surfaces, 275

Erratum, 282

Author index, 283

Key-word index, 284